CLAIMS

1. A scribing method for wafers, wherein a defined beam is directed onto said wafer by means of a beam generator means so as to remove some wafer material from a wafer region, characterized by the further step of generating a first radiation pulse having a predeterminable energy density and used to create a deep pit in said wafer, whereas the pit is deep enough to remain a pit throughout subsequent manufacturing steps of said wafer.

2. The method according to Claim 1, characterized in that a local plasma is generated for creating said deep pit.

3. The method according to Claim 1, characterized in that a laser is used as said beam generator means.

4. The method according to Claim 1, characterized in that the material removed from said wafer is exhausted.

5. The method according to Claim 1, characterized in that a gas jet carries the material removed from said wafer away from said wafer at least during the creation of said deep pit.

6. The method according to Claim 5, characterized in that said gas jet flows in a direction towards the wafer edge.

7. The method according to Claim 5, characterized in that said gas jet comprises inert gas.

8. The method according to Claim 5, characterized in that said gas jet is a N_2 jet.

9. The method according to Claim 1, characterized in that a sacrificial layer is applied on said wafer before said deep pit

is created in said wafer, and that said sacrificial layer is subsequently removed.

10. The method according to Claim 1, characterized in that any residual contaminations possibly present, which remain on said wafer as a result of the creation of said deep pit in said wafer, are reduced or removed by a subsequent evaporating step using a second radiation pulse.

11. The method according to Claim 10, characterized in that the beam parameters for removal or reduction of said residual contaminations are matched.

12. The method according to Claim 1, characterized in that a further radiation pulse is generated as a further step of operation, which, compared against said first radiation pulse, has a lower energy density and causes the wafer material to commence fusing.

13. The method according to Claim 1, characterized in that a plurality of mutually spaced deep pits is created.

14. The method according to Claim 13, characterized in that a pit is created by means of said first radiation pulse and that the pit so created is subjected to the action of said further radiation pulse prior to the creation of a further pit.

15. The method according to Claim 13, characterized in that initially each of said holes or pits is created by means of said first radiation pulse and that only then all holes or pits are each subjected to the action of said further radiation pulse.

16. The method according to Claim 1, characterized in that the depth of said pit is within the range between 3 μm and 10 mm.

17. The method according to Claim 16, characterized in that the

depth of said pit is within the range between 4 μm and 6 μm.

18. A wafer scribing device including a wafer mount and a beam generator means by means of which at least one defined beam can be directed onto said wafer, characterized in that a radiation pulse can be generated by means of which a deep pit can be created in said wafer, whereas the pit is deep enough to remain a pit throughout subsequent manufacturing steps of said wafer.

19. The wafer scribing device according to Claim 18, characterized in that at least one optical element is provided by means of which it is possible to focus said radiation pulse, with said optical element being disposed for displacement along the direction of propagation of said radiation pulse in particular.

20. The wafer scribing device according to Claim 18, characterized in that the radiation energy emerging from said beam generator means is adjustable.

21. The wafer scribing device according to Claim 18, characterized in that said beam generator means emits radiation pulses of different power levels at short intervals, particularly in alternation.

22. The wafer scribing device according to Claim 18, characterized in that said beam generator means comprises at least two beam generator means emitting radiation pulses of different power.

23. The wafer scribing device according to Claim 22, characterized in that said beam generator means comprises moreover at least one beam deflector unit.

24. The wafer scribing device according to Claim 18, characterized in that said beam generator means comprises at least one laser.

25. The wafer scribing device according to Claim 18, characterized in that one fraction of said radiation pulse can be masked out.

26. The wafer scribing device according to Claim 25, characterized in that a central, particularly circular, portion of said radiation pulse can be masked out by means of an aperture.

27. A system for manufacturing semiconductor devices, specifically semiconductor processors, including a wafer scribing device according to claim 1.

28. A scribing method for wafers, wherein a defined beam is directed onto said wafer by means of a beam generator means so as to remove some wafer material from a wafer region, characterized by the further step of generating at least one of a first radiation beam and a second radiation beam having a predeterminable energy density and used to create a deep pit in said wafer, whereas the pit is deep enough to remain a pit throughout subsequent manufacturing steps of said wafer and whereas the edge of the pit is smooth.

29. The method of claim 28, characterized in that said second radiation beam smoothes the edge of the pit.

30. The method of claim 28, characterized in that the first and/or the second radiation beam is at least a pulse.